

## CLAIMS

What is claimed is:

1. A modular joint implant including a male/female junction, the implant comprising:
  - a first component including a bore having a bore opening and an interior surface forming a female side of the male/female junction, the bore having a longitudinal junction axis;
  - a second component including a projection having an exterior surface forming a male side of the male/female junction, the projection being engageable with the bore in male/female seating arrangement along the junction axis, the bore and projection being in contact over an area extending longitudinally from the bore opening, a first portion of the contact area adjacent to the bore opening being offset axially relative to a second portion of the contact area adjacent to the bore opening.
2. The implant of claim 1 wherein a portion of the bore opening is offset axially relative to a second portion of the bore opening.
3. The implant of claim 2 wherein at least a portion of the bore opening is formed transverse to the junction axis to shift the male/female junction contact longitudinally along the axis at that portion.
4. The implant of claim 2 wherein the bore and the projection form complimentary tapers such that the projection engages the bore in male/female taper seating arrangement.
5. The implant of claim 4 wherein the tapers are self-locking.
6. The implant of claim 2 wherein the first component has an exterior surface spaced from the interior surface of the bore, the exterior and interior surfaces defining a wall

between them, the wall having a wall thickness that increases over a portion of the wall from a first location to a second location in a direction generally parallel to the junction axis, the first portion of the bore opening being offset axially in the direction of increasing wall thickness.

7. The implant of claim 2 wherein the implant has a compression side and a tension side in use, the first portion of the bore opening being offset axially on the tension side of the implant.

8. The implant of claim 2 wherein the first component has an exterior surface spaced from the interior surface of the bore, the exterior and interior surfaces defining a wall between them, the wall having a stiffness that increases in a direction generally parallel to the junction axis, the projection further having a stiffness, the first portion of the bore opening being offset in the direction of increasing wall stiffness such that the stiffness of the wall adjacent the first portion of the bore opening is closer to the stiffness of the projection than it would be if it were not offset.

9. The implant of claim 1 wherein a portion of the bore opening is offset radially away from the projection.

10. A modular hip joint implant including a male/female junction, the implant comprising:

a proximal body component having a top end, a bottom end, a medial aspect, and a lateral aspect, a neck formed adjacent the top end and a bore formed into the bottom end, the bore having a bore opening and an interior surface forming a female side of the male/female junction, the bore having a longitudinal junction axis;

a stem component having a first end and a second end, a projection formed adjacent the first end, the projection having an exterior surface forming a male side of the male/female junction, the projection being engageable with the bore in male/female seating arrangement along the junction axis, the male and female sides contacting one another adjacent the bore opening, the bore opening having a portion adjacent the lateral aspect that is offset axially toward the top end relative to a portion of the bore opening adjacent the medial aspect such that the male/female junction contact at the first portion is shifted longitudinally along the junction axis relative to the second portion.

11. The implant of claim 10 wherein the bore and the projection form complimentary tapers, the tapers narrowing from the second end toward the first end.
12. The implant of claim 11 wherein the proximal body component has an exterior surface spaced from the interior surface of the bore, the exterior and interior surfaces defining a wall between them, the wall having a wall thickness that increases over a portion of the wall between the second end and the first end as the bore taper diverges inwardly from the exterior wall in a direction generally parallel to the junction axis such that the first portion of the bore opening is offset axially in the direction of increasing wall thickness.
13. The implant of claim 10 further comprising a femoral head component supported on the neck of the proximal body component and an acetabular component engageable with the femoral head component.
14. A modular joint implant including a male/female junction having a side that is predominately in compression in use and a side that is predominately in tension in use, the implant comprising:

a first component including a bore having a bore opening and an interior surface forming a female side of the male/female junction, the bore having a longitudinal junction axis, the first component having an exterior surface, the interior and exterior surfaces defining a wall between them, wall having a wall thickness, the wall thickness on the tensile side of the implant being greater than the wall thickness on the compressive side of the implant;

a second component including a projection having an exterior surface forming a male side of the male/female junction, the projection being engageable with the bore in male/female seating arrangement along the junction axis.

15. A modular joint implant including a male/female junction having a side that is predominately in compression in use and a side that is predominately in tension in use, the implant comprising:

a first component including a bore having a bore opening and an interior surface forming a female side of the male/female junction, the bore having a longitudinal junction axis, a side of the bore on the tensile side of the implant being shifted axially relative to a side of the bore on the compressive side of the implant;

a second component including a projection having an exterior surface forming a male side of the male/female junction, the projection being engageable with the bore in male/female seating arrangement along the junction axis.